

SUPPORT FOT THE AMENDMENT

Claims 1, 8, and 9 have been amended.

Claim 12 has been added.

The amendment of Claim 1 is supported by original Claims 1 and 8. The amendment of Claim 9 is supported by original Claims 1, 8, and 9. The amendment of Claim 8 and new Claim 12 is supported by page 8, line 25 to page 9, line 4.

No new matter is believed to have been entered by the present amendment.

REMARKS

Claims 1-12 are pending in the present application.

An aqueous solution for micro-etching copper or a copper alloy comprising a main ingredient consisting of sulfuric acid and hydrogen peroxide, an assisting ingredient consisting of phenyltetrazole and a chloride ion source and a benzene sulfonic acid (see Claim 1). None of the prior art discloses or reasonably suggests the present invention, and as such cannot affect the patentability of the present invention.

The rejection of Claims 1, 2, 3, 6, and 7 under 35 U.S.C. §102(b) over Ferrier et al is obviated by amendment. Claim 1 has been amended to recite the limitations of original Claim 8.

Ferrier et al disclose a process for treating metal surfaces with a composition comprising an oxidizer, an acid, a corrosion inhibitor, a source of halide ions and, optionally, a water soluble polymer (see column 4, lines 8-24). However, at no point does Ferrier et al disclose or suggest the presently claimed composition. Specifically, Ferrier et al does not disclose an aqueous solution containing a benzene sulfonic acid. The Examiner concedes this deficiency on page 6, lines 3-4 of paper number 5. In view of this deficiency, Applicants request withdrawal of this ground of rejection.

The rejection of Claims 4 and 5 under 35 U.S.C. §103(a) over Ferrier et al in view of Yasushi et al is obviated by amendment. Claim 1 has been amended to recite the limitations of original Claim 8.

As discussed above, Ferrier et al fails to disclose the claimed aqueous solution for micro-etching copper or a copper alloy. Specifically, Ferrier et al is silent with respect to the inclusion of a benzene sulfonic acid.

Yasushi et al discloses a micro-etching agent containing at least one tetrazole or tetrazole derivative (see English Abstract). However, Yasushi et al is also silent with respect to the inclusion of a benzene sulfonic acid. Therefore, Yasushi et al fails to compensate for the deficiency in the disclosure of Ferrier et al.

For the foregoing reason, Applicants submit that the present invention would not be obvious in view of the combined disclosures of Ferrier et al and Yasushi et al. Withdrawal of this ground of rejection is required.

The rejection of Claims 8 and 9 under 35 U.S.C. §103(a) over Ferrier et al in view of Wong is traversed. Claim 1 has been amended to recite the limitations of original Claim 8.

The Examiner has taken the position that since Wong describes the use of a phenol sulfonic acid, it would have been obvious to modify the composition of Ferrier et al by adding Wong's composition to increase the stability of the solution.

However, at no point does either of these references disclose or suggest such a combination of micro-etching agents. Specifically, no combination of prior art references discloses or suggests a composition comprising sulfuric acid and hydrogen peroxide as *main agents* with a phenyltetrazole and chlorine. Moreover, no prior art document describes the *further addition* of a benzene sulfonic acid, such as phenol sulfonic acid, to the combination of sulfuric acid, hydrogen peroxide, phenyltetrazole, and chlorine.

The composition of Ferrier et al exhibits inferior adhesion with the resin as compared with the micro-etching agent of the present invention due to the use of tetrazole or

benzotriazole as an azole (see Comparative Examples 3 and 4 of the present invention).

Applicants have found if phenyltetrazole is used as an azole and chlorine is combined with the phenyltetrazole, adhesion of the treated surface of copper or copper alloy with a resin is remarkably increases.

On the other hand, although a benzene sulfonic acid such as phenol sulfonic acid described in Wong may increase stability of hydrogen peroxide, the benzene sulfonic acids are oxidized with hydrogen peroxide and produce a brown or black precipitate (see Page 8, lines 13-16). Benzotriazole as an azole as in the composition of Ferrier et al also induces production of a brown or black precipitate if continuously used (see Comparative Example 4 of the present invention).

Accordingly, Applicants have found that the combined use of a benzene sulfonic acid such as phenol sulfonic acid with a phenyltetrazole can control decomposition of hydrogen peroxide and prevent brown or black precipitate from being produced.

Thus, the finding that the combined use of a benzene sulfonic acid with chlorine and a phenyltetrazole in the micro-etching agent comprising sulfuric acid and hydrogen peroxide as main ingredients can remarkably increase adhesion of copper or copper alloy surfaces with a resin and can suppress decomposition of hydrogen peroxide without producing a brown or black precipitate is not obvious from the cited prior art documents.

Citing In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974), MPEP §2143.03 states: "To establish a prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." Applicants submit that based on the failure of Ferrier et al and Wong to disclose or suggest the presently claimed compositions and the advantages obtained thereby, the disclosure of Ferrier et al and Wong fail to meet this requirement. Applicants request withdrawal of this ground of rejection.

With respect to the Restriction Requirement, Applicants affirm the election of Group I, Claims 1-9, with traverse.

In the present application, the Office has required restriction as follows:

Group I: Claims 1-9, drawn to an etchant;

Group II: Claims 10-11, drawn to etchant method.

The Office has characterized Groups I and II as related as product and process of use.

Citing MPEP §806.05(h), the Office concludes that the claimed product can be used in a materially different process such as “one that does not require etching metals such as copper or copper alloys.” However, the Office has failed to provide adequate reasons and/or examples to support this conclusion. Moreover, even if the products can be used as alleged, the Office has failed to provide any support for the assertion that this process is materially different from that claimed. Accordingly, the Office has failed to meet the burden necessary in order to sustain the Restriction Requirement, and as such withdrawal is requested.

Further, MPEP § 803 states as follows:

If the search and examination of an entire application can be made without serious burden, the Examiner must examine it on its merits, even though it includes claims to distinct or independent inventions.

Applicants submit that a search of all claims would not constitute a serious burden on the Office.

Additionally, Applicants note that MPEP §821.04 states:

...if applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all the limitations of the allowable product claim will be rejoined.

Applicants respectfully submit that should the elected group be found allowable, non-elected process Claims 10-11 should be rejoined.

Applicants submit that the present application is now in condition for allowance.

Early notification of such action is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



Norman F. Oblon  
Attorney of Record  
Registration No. 24,618

Vincent K. Shier, Ph.D.  
Registration No. 50,552



22850

Tel.: 703-413-3000

Fax: 703-413-3220

NFO:VKS